

b2
end

8. (Twice Amended) An imaging arrangement as claimed in claim 5, wherein the solid state imager further comprises overwriting means for overwriting an image corresponding to one of the at least two beams.

b3

10. (Once Amended) An imaging arrangement as claimed in claims 1, further comprising means for splitting an incident beam of electromagnetic radiation into at least two beams of electromagnetic radiation for application to the means for gating and converting the beams.

b4

13. (Twice Amended) An imaging arrangement as claimed in claim 1, further comprising means responsive to an event for storing converted image data which was converted before the event.

IN THE DRAWINGS:

Submitted herewith is a Request for Approval of Drawing Changes in which a proposed change to Figure 5 is indicated in red ink.

REMARKS

By this Amendment, Applicants cancel claims 9 and 30-32 without prejudice or disclaimer, and amend claims 1-8, 10, and 13 to more appropriately define the present invention.

In the Office Action, the Examiner required a new title of the invention; rejected claims 7 and 8 under 35 U.S.C. § 112, second paragraph as indefinite; rejected claims 1-4 and 33 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,177,487 to Takenouchi et al. ("Takenouchi"); rejected claims 1, 5 and 6 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,029,009 to Ulich et al. ("Ulich"); rejected claims 1, 9,

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10, 14, and 15 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 3,654,475 to Montpas ("Montpas"); rejected claims 7 and 8 under 35 U.S.C. § 103(a) as unpatentable over Ulich in view of European Patent publication EP 0701185, published March 13, 1996, to Riches ("Riches"); rejected claims 11 and 12 under 35 U.S.C. § 103(a) as unpatentable over Montpas in view of U.S. Patent No. 5,001,348 to Dirsherl et al. ("Dirsherl"); and rejected claim 13 under 35 U.S.C. § 103(a) as unpatentable over Montpas in view of Riches.

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Title and Drawings

Regarding the title, Applicants have amended the title to be more descriptive, thereby satisfying the Examiner's requirement of a new title that is clearly indicative of the present invention. Applicants therefore deem the Examiner's objection to the title overcome.

Regarding the drawings, Applicants propose amending Figure 5, filed concurrently herewith in the attached Request for Approval of Drawing Changes. In the figure, Applicants have corrected an obvious typographical error. No new matter has been added. Upon approval of the proposed change, Applicants respectfully request that the submission of revised drawings be deferred until after a Notice of Allowance has issued.

Claim Rejections under 35 U.S.C. § 112

Regarding the rejection of claims 7 and 8 under 35 U.S.C. § 112, second paragraph, Applicants amend claims 7 and 8 to provide appropriate antecedent basis. Accordingly, the § 112, second paragraph rejection should be withdrawn.

Claim Rejections under 35 U.S.C. § 102(b)

In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, the Examiner must show that each and every element of each of the claims in issue is found, either expressly described or under principles of inherency, in a single prior art reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." See M.P.E.P. §2131, page 2100-69, 8th

Ed., August 2001, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Further, "the elements must be arranged as required by the claim." M.P.E.P. §2131, p. 2100-69. Accordingly, the rejection of claim 13 under § 102(b) is respectfully traversed for the following reasons.

Regarding the rejection of claims 1-4 and 33 under § 102(b) over Takenouchi, claim 1 recites, in part, an "imaging arrangement adapted to receive two dimensional optical data represented by at least two beams of electromagnetic radiation."

In contrast, Takenouchi discloses a document reader for receiving one-dimensional data from a document (col. 3, lines 3-18). As shown in Fig. 4 of Takenouchi, for example, a one-dimensional scanning system may be used to receive one-dimensional data from an image of a document. Each single beam of one-dimensional data is received at photocathode segments 27a-27n (col. 3, lines 40-45), and the beams are time-sequenced.

Thus, Takenouchi does not teach at least an "imaging arrangement adapted to receive two dimensional optical data," as recited in claim 1. Further, Takenouchi does not disclose at least that the received two dimensional optical data is "represented by at least two beams of electromagnetic radiation," as recited in claim 1. Instead, Takenouchi discloses in Fig. 4 scanning a document to receive one dimensional data, representing the one-dimensional data by one beam, receiving the beam at a segment of a photocathode, scanning the document to receive the next one dimensional data, ... and time sequencing the one-dimensional data. In other words, Takenouchi does not describe splitting an image into two or more beams, but, rather, applies each beam representing one-dimensional data to a one dimensional photocathode.

Because Takenouchi does not disclose each and every limitation of claim 1, Applicants submit that independent claim 1 is allowable. In addition, dependent claims 2-4 and 33 are also allowable, at least by virtue of their dependency from allowable base claim 1. Therefore, Applicants respectfully submit that the rejection of claims 1-4 and 33 under 35 U.S.C. § 102(b) should be withdrawn.

Regarding the rejection of claims 1, 5 and 6 under 35 U.S.C. § 102(b) over Ulich, claim 1 further recites, *inter alia*, a photosensitive surface “arranged to comprise a plurality of independently-gatable portions, wherein the independently gatable portions correspond to each of the at least two beams of electromagnetic radiation each portion being responsive to an image signal.”

In contrast, Ulich discloses a camera with variable time delay range gating to overcome distortion and imaging plane problems that occur in lidar systems. The method gates an array of electrodes so that each electrode has a separate time delay signal for delaying a part of an image (col. 3, lines 39-44). Delays near the edges of the field of view (zones 52 in Fig. 3b) may be longer than delays in the center of the field of view (zone 54 in Fig. 3b). Light 58 passes through the array of electrodes 62 and accelerates in accordance with a voltage applied to each electrode to effect the time delays. The light hits photocathode 66 in accordance with the delays.

Thus, Ulich does not disclose at least an “imaging arrangement adapted to receive two dimensional optical data represented by at least two beams of electromagnetic radiation,” as recited in claim 1. Instead, as shown in Fig. 3b, Ulich discloses one beam wherein electrons within the one beam may be accelerated by gated electrodes 62 so that the beam is adjusted to account for curvature.

Ulich also does not disclose at least a photosensitive surface comprising “a plurality of independently-gatable portions, wherein the independently gatable portions correspond to each of the at least two beams of electromagnetic radiation each portion being responsive to an image signal,” as recited in claim 1. As shown in Fig. 4, the photocathode 66 does not have segmented portions. The Examiner correctly noted that electrodes 62 are gated. However, it is improper to characterize gated electrodes 62 as a gated photosensitive surface, because the gated electrode does not have a photosensitive surface. Photocathode 66 has a photosensitive surface, but it is not segmented or gated as shown in Fig. 4. Indeed, because Ulich only discloses one beam, it is unnecessary to have a photosensitive surface with gatable portions corresponding to each of the at least two beams, as recited in claim 1.

Because Ulich does not disclose each and every element of claim 1, Applicants submit that independent claim 1 is allowable. In addition, dependent claims 5 and 6 are also allowable, at least by virtue of their dependency from allowable base claim 1. Therefore, Applicants respectfully submit that the rejection of claims 1, 5 and 6 under 35 U.S.C. § 102(b) should be withdrawn.

Regarding the rejection of claims 1, 10, 14, and 15 under 35 U.S.C. § 102(b) over Montpas, this rejection is traversed. Montpas discloses a light position sensitive photoelectric device to indicate the position of a light source relative to photosensitive material. That is, Montpas discloses at receiving light from a light source. Montpas does not disclose receiving “two-dimensional optical data,” let alone that the two dimensional optical data is “represented by at least two beams of electromagnetic radiation,” as recited in independent claims 1, 14 and 15. Montpas splits a light beam

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16 into four light rays using facets 11-14 to determine the location of a light source. The relative intensities of the light rays allows the system to determine the location of the light source relative to the photosensitive material. Because Montpas does not even disclose receiving two-dimensional optical data, Montpas also does not disclose at least "gating and converting the beams into image data," as recited in independent claims 1, 14 and 15 (emphasis added). It would not be possible for Montpas to gate and convert four light rays that do not include image data into beams containing image data.

Because Montpas does not disclose each and every element of claims 1, 14 and 15, Applicants submit that independent claims 1, 14 and 15 are allowable. In addition, dependent claim 10 is also allowable, at least by virtue of its dependency from allowable base claim 1. Therefore, Applicants respectfully submit that the rejection of claims 1, 10, 14 and 15 under 35 U.S.C. § 102(b) should be withdrawn.

Claim Rejections under 35 U.S.C. § 103(a)

To establish a *prima facie* case of obviousness under 35 U.S.C. §103, each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. (See M.P.E.P. §2143.03 (8th ed. 2001).) Second, a reasonable expectation of success must exist. Third, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Moreover, each of these requirements must "be found in the prior art, and not based on applicant's disclosure." (M.P.E.P. §2143 (8th ed. 2001).)

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The rejection of claims 7 and 8 under 35 U.S.C. § 103(a) as unpatentable over Ulich and Riches is respectfully traversed, since a *prima facie* case of obviousness has not been made by the Examiner.

Applicants already pointed out that Ulich does not teach or suggest at least an "imaging arrangement adapted to receive two dimensional optical data represented by at least two beams of electromagnetic radiation," and a photosensitive surface comprising "a plurality of independently-gatable portions, wherein the independently gatable portions correspond to each of the at least two beams of electromagnetic radiation each portion being responsive to an image signal," as recited in claim 1. (See above discussion in connection with the traversal of the § 102(b) rejection of claim 1 over Ulich.)

Riches fails to cure the deficiencies of Ulich. Riches uses three cameras to effect high speed imaging. Accordingly, Riches does not teach or suggest at least a photosensitive surface comprising "a plurality of independently-gatable portions, wherein the independently gatable portions correspond to each of the at least two beams of electromagnetic radiation each portion being responsive to an image signal," as recited in claim 1.

Because Ulich and Riches, taken singularly or in combination, do not teach or suggest all of the claim elements, the Examiner has not met an essential criteria for establishing a *prima facie* case of obviousness.

Furthermore, because a combination of Ulich and Riches fails to teach or suggest all of the claim elements, there can be no motivation in Ulich and Riches to modify them to produce Applicants' claimed invention. Further, because combining the

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references still would not produce Applicants' claimed invention, there cannot be any reasonable expectation of success derived from the combination of these references. One skilled in the art would only arrive at the present claimed invention by consulting Applicants' disclosure. Therefore, the only way to construct the claimed invention from the cited references would be to rely on aspects related to the present invention. Such reliance, however, would constitute improper hindsight reasoning.

Since Applicants have already established that the applied references do not teach or suggest all the elements of Applicants' independent claim 1, that they cannot be modified to produce the present invention, and that there would be no reasonable expectation of success derived from so combining, Applicants submit that, at least according to the M.P.E.P., the Examiner's reliance on Ulich and Riches is not sufficient to establish *prima facie* obviousness over Applicants' independent claim 1. Therefore, claim 1 is allowable over a combination of Ulich and Riches. In addition, dependent claim 7 and 8 are also allowable at least by virtue of their respective dependency from allowable base claim 1. Accordingly, Applicants respectfully submit that the Examiner should withdraw the 35 U.S.C. § 103(a) rejection of claims 7 and 8.

The rejection of claims 11 and 12 under 35 U.S.C. § 103(a) as unpatentable over Montpas and Dirscherl is respectfully traversed, since a *prima facie* case of obviousness has not been made by the Examiner.

Applicants already pointed out that Montpas does not teach or suggest at least receiving "two dimensional optical data represented by at least two beams of electromagnetic radiation," or "means for gating and converting the beams into image

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data,” as recited in independent claim 1. (See above discussion in connection with the traversal of the § 102(b) rejection of claim 1 over Montpas.)

Dirscherl fails to cure the deficiencies of Montpas. Dirscherl discloses a recognition system for alarming and early warning against starting and approaching flying objects. In Fig. 11, Dirscherl discloses a beam splitter for image analysis. Dirscherl does not teach or suggest at least a photosensitive surface comprising “a plurality of independently-gatable portions, wherein the independently gatable portions correspond to each of the at least two beams of electromagnetic radiation each portion being responsive to an image signal,” as recited in claim 1.

Because Montpas and Dirscherl, taken singularly or in combination, do not teach or suggest all of the claim elements, the Examiner has not met an essential criteria for establishing a *prima facie* case of obviousness.

Furthermore, because a combination of Montpas and Dirscherl fails to teach or suggest all of the claim elements, there can be no motivation in Montpas and Dirscherl to modify them to produce Applicants’ claimed invention. Further, because combining the references still would not produce Applicants’ claimed invention, there cannot be any reasonable expectation of success derived from the combination of these references. One skilled in the art would only arrive at the present claimed invention by consulting Applicants’ disclosure. Therefore, the only way to construct the claimed invention from the cited references would be to rely on aspects related to the present invention. Such reliance, however, would constitute improper hindsight reasoning.

Since Applicants have already established that the applied references do not teach or suggest all the elements of Applicants’ independent claim 1, that they cannot

be modified to produce the present invention, and that there would be no reasonable expectation of success derived from so combining, Applicants submit that, at least according to the M.P.E.P., the Examiner's citation of Montpas and Dirscherl is not sufficient to establish *prima facie* obviousness over Applicants' independent claim 1. Therefore, claim 1 is allowable over a combination of Montpas and Dirscherl. In addition, dependent claim 11 and 12 are also allowable at least by virtue of their respective dependency from allowable base claim 1. Accordingly, Applicants respectfully submit that the Examiner should withdraw the 35 U.S.C. § 103(a) rejection of claims 11 and 12.

The rejection of claim 13 under 35 U.S.C. § 103(a) as unpatentable over Montpas and Riches is respectfully traversed, since a *prima facie* case of obviousness has not been made by the Examiner.

Riches also fails to cure the deficiencies of Montpas. Riches uses three cameras to effect high speed imaging. Accordingly, Riches does not teach or suggest at least a photosensitive surface comprising "a plurality of independently-gatable portions, wherein the independently gatable portions correspond to each of the at least two beams of electromagnetic radiation each portion being responsive to an image signal," as recited in claim 1.

Because Montpas and Riches, taken singularly or in combination, do not teach or suggest all of the claim elements, the Examiner has not met an essential criteria for establishing a *prima facie* case of obviousness.

Furthermore, because a combination of Montpas and Riches fails to teach or suggest all of the claim elements, there can be no motivation in Montpas and Riches to

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modify them to produce Applicants' claimed invention. Further, because combining the references still would not produce Applicants' claimed invention, there cannot be any reasonable expectation of success derived from the combination of these references. One skilled in the art would only arrive at the present claimed invention by consulting Applicants' disclosure. Therefore, the only way to construct the claimed invention from the cited references would be to rely on aspects related to the present invention. Such reliance, however, would constitute improper hindsight reasoning.

Since Applicants have already established that the applied references do not teach or suggest all the elements of Applicants' independent claim 1, that they cannot be modified to produce the present invention, and that there would be no reasonable expectation of success derived from so combining, Applicants submit that, at least according to the M.P.E.P., the Examiner's citation of Montpas and Riches is not sufficient to establish *prima facie* obviousness over Applicants' independent claim 1. Therefore, claim 1 is allowable over a combination of Montpas and Riches. In addition, dependent claim 13 is also allowable at least by virtue of its respective dependency from allowable base claim 1. Accordingly, Applicants respectfully submit that the Examiner should withdraw the 35 U.S.C. § 103(a) rejection of claim 13.

CONCLUSION

Attached hereto is a marked-up version of the changes made to the claims and specification by this amendment. The attachment is captioned "**Appendix to the Amendment of April 14, 2003**" Deletions appear as normal text surrounded by [] and additions appear as underlined text.

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Should the Examiner continue to dispute the patentability of the claims after consideration of this Amendment, Applicants encourage the Examiner to contact Applicants' undersigned representative by telephone to discuss any remaining issues or to resolve any potential misunderstandings.

In view of the foregoing, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: April 14, 2003

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APPENDIX TO AMENDMENT OF APRIL 14, 2003

Version with Markings to Show Changes Made

Amendments to the Specification

Please amend the title, as follows:

IMAGING ARRANGEMENT AND METHOD FOR HIGH-SPEED IMAGING

Amendments to the Claims

Please amend claims 1-8, 10, and 13, as follows:

1. (Once Amended) An imaging arrangement adapted to receive two dimensional optical data represented by at least two beams of electromagnetic radiation, the arrangement comprising means for gating and converting the beams into image data, which means for gating and converting the beams into image data, includes a single electro-optic device comprising a photosensitive surface which surface is arranged to comprise a plurality of independently-gatable portions, wherein the independently gatable portions correspond to each of the at least two beams of electromagnetic radiation each portion being responsive to an image signal.

2. (Once Amended) An imaging arrangement [electro-optic device] as claimed in claim 1, wherein the device comprises an image intensifier.

3. (Once Amended) An imaging arrangement [electro-optic device] as claimed in claim 2, wherein the image intensifier comprises a segmented photocathode.

4. (Once Amended) An imaging arrangement [electro-optic device] as claimed in claim 3, wherein the segmented photocathode comprises a photocathode layer and a segmented conductive layer adjacent the photocathode layer.

5. (Once Amended) An imaging arrangement [electro-optic device] as claimed in claim 1, wherein the device comprises a solid-state imager.

6. (Once Amended) An imaging arrangement [electro-optic device] as claimed in claim 5, wherein the solid state imager comprises segmented imaging sections.

7. (Twice Amended) An imaging arrangement [electro-optic device] as claimed in claim 5, wherein the solid state imager further comprises erasing means for erasing an image corresponding to one of the at least two [plurality of] beams.

8. (Twice Amended) An imaging arrangement [electro-optic device] as claimed in claim 5, wherein the solid state imager further comprises overwriting means for overwriting an image corresponding to one of the at least two [plurality of] beams.

10. (Once Amended) An imaging arrangement as claimed in claims [9] 1, further comprising means for splitting an incident beam of electromagnetic radiation into at least two beams of electromagnetic radiation for application to the means for gating and converting the beams.

13. (Twice Amended) An imaging arrangement as claimed in claim [9] 1, further comprising means responsive to an event for storing converted image data which was converted before the event.